

HOISTING AND RIGGING SAFETY	Manual	ESHQ
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[Ownership matrix](#)

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1.0 PURPOSE AND SCOPE

(7.1.1, 7.1.2, 7.1.3, 7.1.6)

This Standard describes the Tank Operations Contractor (TOC) organizational roles and responsibilities for implementing the TOC Hoisting and Rigging Safety Program. [DOE-RL-92-36](#), “Hanford Site Hoisting and Rigging Manual” (HHRM), provides the baseline requirements for all Hanford Site Hoisting and Rigging (H&R) activities and is fully invoked by this Standard. In addition, this Standard provides specific methods for implementing portions of the HHRM, and in some cases provides additional TOC requirements not contained in the [DOE-RL-92-36](#). As such, this standard supplements but does not replace or supersede the Hanford Site Hoisting and Rigging Manual.

This standard applies to the TOC and subcontracted organizations that operate hoisting and rigging equipment or perform hoisting and rigging activities for the TOC.

Baseline forklift requirements are included in [DOE-RL-92-36](#) and are also governed by the TOC H&R safety program. [TFC-ESHQ-S IS-C-07](#) provides requirements in addition to [DOE-RL-92-36](#) for forklift operations conducted by or for the TOC.

2.0 IMPLEMENTATION

This standard is effective on the date shown in the header.

3.0 STANDARD

Line management is responsible to maintain compliance with [DOE-RL-92-36](#), “Hanford Site Hoisting and Rigging Manual,” and additional TOC specific H&R safety program requirements set forth or referenced by this Standard. The H&R Safety Subject Matter Expert (SME) will provide guidance in interpretation of requirements and development of TOC-specific direction as necessary to assist in implementing the TOC H&R safety program.

This Standard is reviewed and approved by the TOC Hoisting and Rigging Committee. Committee members are responsible to communicate H&R issues within their respective organizations. A list of TOC H&R representatives is maintained on the H&R web page in the Safety and Health Toolbox ([POC Listing](#)).

3.1 Roles and Responsibilities

3.1.1 WRPS Safety and Health Level 2 Manager

The WRPS Safety and Health Level 2 Manager is responsible for:

- Implementing a hoisting and rigging safety program applicable to WRPS and subcontractor organizations that is compliant with [DOE-RL-92-36](#) and additional requirements specified or referenced by this Standard.

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3.1.2 Industrial Safety Programs Manager

The Industrial Safety Programs Manager performs the following duties:

- Identifies a safety professional as the Safety Program H&R Subject Matter Expert (SME) for the TOC.
- Identifies safety professionals for providing oversight of H&R activities conducted by or for the TOC.
- Implements a safety surveillance program to identify areas for improvement and validate compliance with H&R safety requirements.
- Participates in incident/accident investigations involving hoisting and rigging equipment or services as necessary.

NOTE: Leadership of incident/accident investigations is typically performed by a designated representative of the organization responsible for the H&R activities at the time of an event, and in accordance with the requirements of [TFC-OPS-OPER-C-14](#).

3.1.3 Safety Program Hoisting and Rigging Subject Matter Expert (SME)

The Safety Program Hoisting and Rigging SME performs the following duties:

- Provides guidance in interpretation of [DOE-RL-92-36](#) and development of TOC-specific H&R requirements.
- Based on requirements set forth in [DOE-RL-92-36](#) and in conjunction with the TOC training department, develops training and qualification guidelines for TOC and subcontractor personnel identified to perform H&R activities at or for the TOC.
- Serves as chairperson for the TOC Hoisting and Rigging Committee in accordance with [TFC-CHARTER-31](#).
- Serves as the TOC safety program representative and voting member of the Hanford Site Hoisting and Rigging Committee.
- Serves as the TOC safety program point of contact for review, communication, submittal, and approval of revisions to the HHRM.
- Distributes H&R bulletins, lessons learned, and other significant H&R information.
- Participates in incident/accident investigations involving H&R equipment or services and subsequent corrective action development.
- Performs oversight of Site Services and TOC construction subcontractors providing H&R equipment or services for the TOC.

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3.1.4 Base Operations, SST Retrieval and Closure, and Tank Farm Projects Managers

Base Operations, SST Retrieval and Closure, and Tank Farm Projects Managers perform the following:

- Designate a representative from each respective organization to participate as core members of the WRPS Hoisting and Rigging Committee in accordance with TFC-CHARTER-31, “Hoisting and Rigging Committee Charter.”
- Assign a Lead H&R Equipment Custodian to maintain accountability of company-owned and leased H&R equipment, and ensure required maintenance, repair, and inspections are current for equipment in use.
- Designate individual(s) as the primary point-of-contact between the TOC and the Site Services Contractor regarding crane and rigging contract issues.
- Assigns a crane coordinator to provide day-to-day scheduling of site services mobile crane support for operations, projects, and construction and commissioning activities.
- Initiate investigation of events involving H&R activities and/or equipment, and participate in or oversee causal analysis identification and corrective action development as necessary.
- Include H&R SMEs (Safety and/or Engineering) in work planning, event investigations, and problem resolution as necessary.

3.1.5 Construction and Commissioning Manager

The Construction and Commissioning Manager performs the following:

- Establishes and communicates expectations, reviews, approves, and provides oversight for construction subcontracts involving H&R equipment or services.
- Enforces construction subcontractor compliance with H&R requirements stipulated in [DOE-RL-92-36](#), and additional TOC requirements contained within or referenced by this standard.
- Assigns qualified H&R equipment custodian(s) to make sure H&R equipment used by construction subcontractor personnel is properly inspected, maintained, and tagged. The information on the tag shall contain the periodic inspection due date and any additional information as required by DOE-RL-92-36 and/or applicable manufacturer specifications.
- Ensures training and qualification of construction subcontractor personnel performing hoisting and rigging activities for TOC are in compliance with DOE-RL-92-36. See Attachment A for guidance.
- Participates (or designates a representative) as a core member the TOC Hoisting and Rigging Committee in accordance with [TFC-CHARTER-31](#), “Hoisting and Rigging Committee Charter.”

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- Leads or participates in incident/accident investigations involving construction subcontractor H&R activities or services, as necessary.
- Involves H&R SMEs (Safety and/or Engineering) in work planning, event investigations, and problem resolution as necessary.

3.1.6 WRPS Organizations

All TOC organizations engaged in H&R activities are expected to:

- Conduct all H&R activities in compliance with [DOE-RL-92-36](#), “Hanford Site Hoisting and Rigging Manual” and additional TOC specific hoisting and rigging requirements identified or referenced in this Standard.
- Assign equipment custodians as necessary to meet H&R equipment maintenance and accountability requirements as described in Section [3.1.11](#) of this Standard.
- Conduct documented (e.g., safety surveillance report, MOP, PSOP, etc.) field oversight of crane, rigging, and forklift activities.
- Notify the shift office and the Hoisting and Rigging Safety SME as soon as possible following any abnormal H&R event, and prior to any critique, fact finding meeting or incident investigation whenever possible.
- Notify the H&R Contract Manager or Buyer’s Technical Representative (BTR) of any H&R incident involving equipment and/or services procured from site services or other subcontractors.
- Review determination to return equipment (e.g., crane, hoist, etc.) to service following an abnormal event or equipment malfunction/repair. This review should include contacting the safety program H&R SME and/or Lead Rigging Engineer to assist in resolving questions or concerns prior to allowing affected equipment to resume operation in TOC facilities.
- Communicate facts surrounding any abnormal H&R event or equipment malfunction (including return to service determination) to applicable employees prior to resuming work with affected equipment.
- Notify shift office of a crane or hoist returning to service in TOC facilities following any abnormal H&R event involving the crane or hoist.
- Include H&R SMEs (Safety and/or Engineering) in work planning, event investigations, and problem resolution as necessary.
- Prohibit unauthorized personnel to perform maintenance or repairs on H&R equipment.

NOTE: Authorized personnel are defined as those persons approved or assigned by the employer to perform a specific type of duty.

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3.1.7 Field Work Supervisor (FWS)

All WRPS and subcontracted Field Work Supervisors overseeing H&R work activities are expected to:

- Stop work in the event hazardous conditions develop that may endanger personnel, equipment, or facilities.
 - If a load is suspended from a crane take minimal action to place the load/crane in a safe condition and preserve the scene for further investigation.
 - Do not allow work to continue under uncertain equipment conditions beyond stabilizing an eminently hazardous condition when possible to do so in a safe manner.
- Verify personnel are appropriately trained and qualified to perform assigned H&R activities.
- Assign designated leaders (DL) for hoisting and rigging activities as required by sections 2.2.4 and 2.2.5 of [DOE-RL-92-36](#).
- Enforce the expectation that all H&R work is to be performed in accordance with established requirements and procedures.
- Verify all cranes, forklifts, and rigging equipment have been inspected and operationally checked (as applicable) prior to use. See [Section 4](#), General Requirements.
- Verify permanently attached lifting points have been inspected, tested, and appropriately marked prior to use.
- Contact a Qualified Rigging Engineer for assistance in mitigating unresolved hoisting and rigging or lifting point concerns prior to making the lift(s).
- Review and approve critical and special lifts.
- Confirm with the DL and crane operator the weight of the load(s) to be lifted and the load chart rating of the crane at the maximum intended radius.
- Assign trained and qualified Designated Leaders (DL) in accordance with [DOE-RL-92-36](#).
- Verify form [A-6003-884](#) is complete for special lifts, and all required signatures are present before allowing the lift to be performed.
- Perform pre-job briefings in accordance with [TFC-OPS-MAINT-C-02](#).
- Stop work and notify the shift office following an unplanned crane, forklift, or other H&R event resulting in personnel injury, equipment failure or malfunction, uncontrolled movement/lowering of load, or near miss having the potential for personnel injury or equipment damage.

- Promptly notify the applicable equipment custodian whenever any problems are identified involving cranes, forklifts, or other H&R equipment.

3.1.8 Designated Leader

Designated Leaders (DLs) are required for H&R activities requiring more than one person and are responsible for directing field H&R activities (Refer to [DOE-RL-92-36](#), Section 2). DLs shall be trained and knowledgeable about the equipment operation and activities to be performed and qualification is based upon the equipment s/he will be directing. DLs shall meet the training requirements listed in the following table:

Equipment	Initial Training	Retraining (36 Months)
Cab and Floor-Operated Cranes	Basic Crane & Rigging Safety (040784 or equivalent)	Basic Crane & Rigging Refresher (040786 or equivalent) or maintain the qualification via OJE
Mobile Cranes	Basic Crane & Rigging Safety (040784 or equivalent) and one of the following: Advanced Rigging Qualifications (042310/042315 or equivalent) OR Mobile Crane Operation & Setup (042321 or equivalent) and Load Charts and Load Moment Indicators (LMIs) (042327 or equivalent)	Maintain Advanced Rigging Qualifications OR Mobile Crane Operation & Setup (042321 or equivalent) and Load Charts and Load Moment Indicators (LMIs) (042327 or equivalent)
Forklift	Forklift Operational Safety (044470 or equivalent)	Forklift Operational Safety (044470 or equivalent) OR Maintain a Forklift Operator Qualification
Incidental Rigging	Basic Crane & Rigging Safety (040784 or equivalent) And Incidental Rigging OJE (042860 or equivalent)	Maintain Incidental Rigging Qualification

Designated Leaders are also responsible for the following:

- Completing the Riggers and Operators Field Verification Checklist contained in A-6003-884 for special lifts prior to making the lift.
- Perform all lifts as designed and approved, or pause the work to appropriately mitigate any concerns with the existing plan or procedure.

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- Perform pre-lift and pre-job requirements in accordance with [TFC-OPS-MAINT-C-02](#).
- Confirm with the FWS and crane operator the weight of the load(s) to be lifted and the load chart rating of the crane at the maximum intended radius.

3.1.9 Designated Leader for Critical Lift

Designated Leaders for critical lifts shall meet the training requirements for Designated Leader described in section 3.1.9., and perform additional functions described in section 2.2.4 of [DOE-RL-92-36](#).

3.1.10 TOC Lead Equipment Custodian

The TOC Lead Equipment Custodian will:

- Obtain training and qualification to perform the duties and functions of the position as defined in Section 4.0 of [DOE-RL-92-36](#) by attending course 042870 (or equivalent).
- Be responsible for each crane, hoist, lift truck, below the hook lifting device, rigging hardware, and all other H&R equipment that requires scheduled maintenance, inspection, and record keeping.
- Maintain a master list of TOC owned and leased H&R equipment.
- Track and schedule required maintenance and inspection of TOC owned and leased hoisting and rigging equipment.
- Maintain an equipment tagging program for TOC owned and leased H&R equipment.

NOTE: It is important that equipment users know who the custodian is and how to make contact with the custodian as may become necessary. This information should be attached to the equipment or included as part of the tagging method.

- Perform the functions and responsibilities of Forklift Truck Custodian as described in Chapter 6 of [DOE-RL-92-36](#).
- Perform additional duties as listed in Chapter 2 of [DOE-RL-92-36](#).

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3.1.11 Safety

Field safety professionals are responsible for the following:

- Perform periodic field oversight of crane, forklift, and other H&R operations to ensure safe and compliant performance. Document observations on the Safety and Health Field Surveillance Report, MOP, and/or PER as applicable.
- Perform the duties of the responsible safety organization as defined in Section 2 of [DOE-RL-92-36](#).
- Review and approve critical lift plans as specified in Chapter 3 of [DOE-RL-92-36](#).

NOTE: The primary responsibility of the occupational safety representative in review and approval of critical lift plans is to assess the overall plan to ensure all industrial safety aspects of the work have been considered, and to identify possible discrepancies in the plan.

- Review and approve H&R processes in hostile environments as may be required in accordance with Chapter 18 of [DOE-RL-92-36](#).
- Participate in hoisting and rigging assessment activities as requested.
- Perform incidental safety inspections of TOC and subcontractor cranes, forklifts, and other H&R equipment (including cranes provided by site services).

3.1.12 Quality Assurance

(7.1.4, 7.1.5)

Quality Assurance is responsible for the following:

- Ensure at least one inspector is qualified to perform surveillances of mobile crane inspections.
- Perform periodic surveillances of cranes, forklifts and H&R equipment and operations conducted by and for the TOC.
- Regularly perform surveillances of pre-use and periodic inspections to ensure mobile crane components are operationally safe.
- Documenting surveillances in accordance with [TFC-PLN-02](#).
- Participate in H&R assessment activities as requested.

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- For first time lifts of cover blocks, ensure tags are installed on each cover block listing the following information:
 - Work package number
 - Weight of cover block (in pounds)
 - Key block (if applicable)
 - Test date.

NOTE: Tagging of any other items (e.g., cover plates, shield plugs, etc.) is at the discretion of the system/component engineer.

3.1.13 Training Department

The Training department is responsible for the following:

- Perform training organization responsibilities as defined in Chapter 2 of [DOE-RL-92-36](#)
- Periodically verify crane operator training programs meet the requirements of [DOE-RL-92-36](#) and Attachment A.
- Review and approve training equivalencies and establish designators to identify equivalencies and document subcontractor H&R training
- Tracking and scheduling required training for personnel performing H&R activities
- Providing assistance in the development of subcontractor training/qualification equivalency determinations and associated record retention methods.

3.1.14 Engineering Department

The Engineering department is responsible for the following:

- Identifying an engineering professional as the Engineering Hoisting and Rigging Subject Matter Expert (SME).

3.1.15 Engineering Hoisting and Rigging Subject Matter Expert

The Engineering H&R SME performs the following:

- Assigns qualified rigging engineers using qualification card 350847 as needed to support TOC H&R activities.
- Serves as core member of the TOC Hoisting and Rigging Committee.
- Serves as TOC engineering program representative and voting member of the Hanford Site Hoisting and Rigging Committee.
- Serves as TOC engineering program point of contact for review, communication, submittal, and approval of revisions to the Hanford Site Hoisting and Rigging Manual.
- Distributes H&R bulletins, lessons learned, and other significant H&R information.

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- Participates as needed in incident/accident investigations involving H&R equipment or services, and subsequent corrective action development.
- Provides rigging engineering services as required, including structural evaluation of items to be lifted, lift point evaluations, and lift plan design in accordance with applicable engineering instructions and procedures.
- Maintains the lifting point database.
- Developments, reviews, and approves critical lift plans and special lift instructions.
- Provides qualified Rigging Engineer review and approval of the procurement of all H&R equipment.

3.1.16 Production Planning and 222-S Laboratory Services Work Control

Production Planning and 222-S Laboratory Services Work Control are responsible for:

- Ensuring that all planned H&R work is compliant with [DOE-RL-92-36](#) and additional requirements established or referenced in this standard.
- Ensuring that work planners and others involved with planning H&R activities are appropriately trained in established H&R requirements.

4.0 GENERAL REQUIREMENTS

1. Any re-configuration of a crane (e.g., installation or removal of a jib, re-reeving wire rope, removing load block/hook or headache ball, etc.) must be overseen by a designated representative of the equipment custodial company/organization.
2. When a mobile crane is initially set up for making a lift or series of lifts, or is reconfigured for a specific purpose (e.g., re-reeving wire rope and/or installing the jib) a full range operational check (no load) in the same configuration as will be used for the lift(s) shall be performed prior to making the actual lift or series of lifts ([Lesson Learned IB-08-048](#)).
3. Outrigger pads must be used for all WRPS work activities requiring the use of a mobile crane. This provides greater ground stability for the crane and protection of equipment. Minimum requirements for the use of outrigger pads are as follows:
 - Minimum 2 feet square pads for 22-ton and smaller cranes.
 - Minimum 3 feet square pads for cranes greater than 22-ton and up to 90-ton.
 - Minimum 4 feet square pads for Grove 110-ton crane.

NOTE: The Rigging Engineer may waive the outrigger pad requirement based on of the lift procedure or instruction, crane load charts, and RPP-CALC-25074.

4. Mobile crane travel within tank farm boundaries requires a minimum of two spotters and should be done with crane hooks restrained whenever practical. If travel must be done with a hook unrestrained to allow boom movement, at least one of the spotters must be

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crane signal person qualified in order to assist in crane operation (e.g., boom movement) functions as necessary.

5. Vehicular traffic shall be controlled using standard signs and signals when cranes are stopped on roadways used by other motor vehicles.
6. Lifts in close tolerance situations where the potential exists for binding or where an item may be stuck in place (e.g., excessive rust, corrosion, paint, or other adhesive forces) must include some means of finer control, and not be lifted directly by the crane. Examples of finer control are use of chain hoist(s) with the crane and/or incorporation of a load cell and not to exceed limits.
7. Temperature controls must be applied to lifting operations as follows:
 - No lifts will be performed in temperatures below 10 °F (RPP-9551).
 - Rigging hardware used to perform lifts in temperatures below 30°F must have approval from the equipment manufacturer ([Hanford Site Hoisting and Rigging Committee Bulletin, March 8, 2004](#)).
 - Contact a qualified Rigging Engineer for questions regarding temperature limitations.
8. Crane operations must only take place under the direction of a qualified signal person and all crane team members must remain attentive to the task at hand at all times. ([Lessons Learned IB-09-010](#)).
9. Crane operators shall be familiar with unique features or characteristics of the specific crane they are assigned to operate prior to operation. This may require review of the crane and/or LMI manual(s) as well as discussion with supervision or other crane operators. Any unfamiliarity with the equipment must be resolved prior to operating the equipment.
10. Softening material must be used when rigging slings (especially synthetic) are subjected to abrupt or abrasive surfaces.

5.0 CRITICAL AND SPECIAL LIFTS

Chapter 3.0 of [DOE-RL-92-36](#) provides guidelines, rules, and requirements applicable to critical lifts and describes the planning and documentation required to perform a critical lift. It also refers to lifts that are not considered critical lifts but require special precautions. These are referred to as Special Lifts.

A lift not specifically subject to DOE-RL-92-36 critical lift criteria may be designated as a critical lift at the discretion of the responsible manager. A lift shall be designated critical based on the criteria in DOE-RL-92-36 and the following:

1. The load being lifted is 80% or more of a mobile crane's gross load chart rating (total maximum capacity of the crane) or 90% or more of the crane's load chart rating in any configuration for the maximum radius to be experienced.

2. Critical and special lift planning, and lifting point inspection shall be done in accordance with [TFC-ENG-FACSUP-C-25](#).

6.0 RECORDS

The following records are generated during the performance of this procedure:

Record Description	Vital Record Y/N	QA Record Y/N	QA Record Retention L/NP	NARA Retention Schedule	Other Retention Requirements	Records Custodian
Work Order	Y	Y	Y	ENV-1.d8a	N/A	Planning
Hoisting and Rigging: Lift Instructions Determination form (A-6003-884)	N	N	N	ENV-1.d8a	N/A	Planning

The identified record custodian is responsible for record retention in accordance with [TFC-BSM-IRM_DC-C-02](#).

7.0 SOURCES

7.1 Requirements

1. 29 CFR 1910, "Occupational Safety and Health Standards."
2. 29 CFR 1926, "Safety and Health Regulations for Construction."
3. DOE-RL-92-36, "Hanford Site Hoisting and Rigging Manual."
4. TFC-PLN-02, "Quality Assurance Program Description."
5. TFC-PLN-32, "Tank Operations Contractor Safety Management Programs."
6. TFC-ESHQ-S_IS-C-07, "Powered Industrial Trucks."

7.2 References

1. ASME B-30 Series, "Safety Standards Committee for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings."
2. ASME B56.1, "Safety Standard for Low Lift and High Lift Trucks."
3. ASME B56.6, "Safety Standard for Rough Terrain Forklift Trucks."
4. DOE-STD-1090-2001, "Hoisting and Rigging Standard."
5. TFC-BSM-IRM_DC-C-02, "Records Management."
6. TFC-CHARTER-31, "Hoisting and Rigging Committee Charter."

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7. TFC-OPS-MAINT-C-02, "Pre-Job Briefing."
8. TFC-OPS-OPER-C-14, "Event Investigation Process."

ATTACHMENT A – MEDICAL AND TRAINING REQUIREMENTS FOR CRANE AND FORKLIFT OPERATORS

Equipment	GENERAL REQUIREMENTS
CRANE OPERATOR QUALIFICATIONS	<p>Crane operators must complete the following:</p> <ul style="list-style-type: none"> • Physical examination (initial and every 36 months thereafter) • Substance abuse test (initial and every 36 months thereafter) • Completion of H&R training for the type and class of equipment to be operated in accordance with DOE RL 92-36. <p>Acceptable Hoisting and Rigging training includes either:</p> <ul style="list-style-type: none"> • Possession of Certified Crane Operator's card current within previous 36 months, OR • Completion of Hanford site H&R training (or equivalent). • Acceptance of previous crane operator training is conditional upon operators passing an oral or written examination and an onsite equipment specific OJE for the class of crane being operated within the previous 36 months. <p>Crane operator training must be commensurate with HAMMER Hoisting and Rigging Training Program Description.</p>
FORKLIFT OPERATOR QUALIFICATIONS	<p>Forklift operators must complete the following:</p> <ul style="list-style-type: none"> • Site training for the specific class of forklift to be operated. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Submission of previous equivalent forklift operator training in accordance with DOE-RL 92-36. This requires documented evidence of the type and class of equipment and hours of experience, <p style="text-align: center;">AND</p> <ul style="list-style-type: none"> • Proof of Vendor or equipment manufacturer training compliant with 29 CFR 1910.178 (7.1.1) • Acceptance of previous forklift operator training is conditional upon operators passing an oral or written examination and an onsite equipment specific OJE for the class of forklift being operated within the previous 36 months. <p>NOTE: Physical exam and substance abuse testing requirements listed below apply to operators of forklifts designed for highway use with a gross vehicle weight rating of 26,001 lb or more.</p> <ul style="list-style-type: none"> • Physical examination (initial and every 36 months thereafter) • Substance abuse test (initial and every 36 months thereafter)